

BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
OIL CONSERVATION COMMISSION CONFERENCE ROOM  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO  
May 9, 1973

EXAMINER HEARING

IN THE MATTER OF:

Application of Tamarack Petroleum  
Company, Inc. for a unit agreement  
and for a waterflood project, Lea  
County, New Mexico.

Cases No. 4959 and  
4960

BEFORE: Daniel S. Nutter  
Examiner

TRANSCRIPT OF HEARING

dearnley, meier & mc cormick

1 MR. NUTTER: We will next call Case No. 4959.

2 MR. CARR: Case 4959, Application of Tamarack Petroleum  
3 Company, Inc. for a unit agreement, Lea County, New Mexico.

4 MR. KELLAHIN: Thomas Kellahin of Kellahin & Fox,  
5 Santa Fe, New Mexico, appearing for the Applicant, Tamarack  
6 Petroleum Company. If the Examiner please, we would like for  
7 purposes of Case 4959 and 4960 to consolidate our testimony.

8 MR. NUTTER: We will next call Case No. 4960.

9 MR. CARR: Case 4960, Application of Tamarack Petroleum  
10 Company, Inc. for a waterflood project, Lea County, New Mexico.

11 MR. NUTTER: Cases 4959 and 4960 will be consolidated  
12 for purposes of testimony.

13 MR. KELLAHIN: If the Examiner please, I have two  
14 witnesses to be sworn.

15 ALBERT METCALFE

16 appeared as a witness, and after being duly sworn, testified as  
17 follows:

18 DIRECT EXAMINATION

19 BY MR. KELLAHIN:

20 Q Mr. Metcalfe, would you please state your name, by whom you  
21 are employed, and in what capacity?

22 A Albert Metcalfe, Tamarack Petroleum Company, Vice President.

23 Q Have you previously testified before this Commission or  
24 one of its hearing examiners and had your qualifications  
25 as an expert witness accepted and made a matter of record?

1 A Yes, I have.

2 Q Have you examined and are you familiar with the facts of the  
3 Tamarack Petroleum Company application in this case?

4 A Yes.

5 MR. KELLAHIN: Mr. Examiner, are the witness' qualifica-  
6 tions as an expert acceptable?

7 MR. NUTTER: Yes, sir, they are.

8 Q (By Mr. Kellahin) Mr. Metcalfe, would you please state  
9 briefly what is sought by Tamarack Petroleum Company for  
10 these two particular applications?

11 A Well, we seek approval to unitize for secondary recovery by  
12 waterflooding 762 acres in the Bronco Wolfcamp Field in  
13 Lea County. We also seek approval to convert three producing  
14 wells to water injection wells.

15 Q Will you please refer to what has been marked as Applicant's  
16 Exhibit No. 1, that's the Unit Agreement and the attachments,  
17 and please identify them for us.

18 A This is our Unit Agreement for the Bronco Wolfcamp Unit.

19 Q Is there an exhibit or an attachment to the Unit Agreement  
20 that outlines the proposed unit area?

21 A Yes, there is. Exhibit A is a plat showing the proposed  
22 unit area and Exhibit B describes each of the six tracts  
23 in the unit area with their participation in the unit.

24 Q What type of land is involved, Mr. Metcalfe?

25 A It's all fee land.

1 Q There is no federal land or state land, is there?

2 A There is not.

3 Q I believe Attachment C to the Unit Agreement is a list of  
4 the interest owners. Is this a complete list of the owner-  
5 ship of the tracts in the unit?

6 A Yes, it is.

7 Q Will you please indicate what per cent of the working  
8 interest has signed the Unit Agreement?

9 A The working interest is 100% signed.

10 Q I believe Attachment D to the Unit Agreement is the ratifi-  
11 cations by the royalty interest owners and Attachment E is  
12 the ratifications of the working interest owners. What  
13 percentage of the royalty interest owners have signed the  
14 agreement, Mr. Metcalfe?

15 A There are 38 royalty interest owners and all except one have  
16 signed -- well, excuse me. Thirty-eight royalty interest  
17 owners, one has not signed who owns 1.04% of the production  
18 from four tracts, which would entitle this interest to  
19 1/2 of 1% of the unit production under Phase II. This is  
20 Mrs. Simpson, and she's been contacted several times but  
21 has refused to sign the Unit Agreement. In addition to  
22 Mrs. Simpson, we have three very small, unleased mineral  
23 owners in Tract 2. They have a total of 2.3% of the minerals  
24 in Tract 2 which would entitle them to 1/10th of 1% of the  
25 unit production. All attempts to contact these unleased

1 mineral owners have failed and we get no response to our  
2 correspondence.

3 Q Have any of the individuals ratified the Unit Agreement  
4 whose ratifications are not included in our Attachments  
5 D and E?

6 A Yes, the Lowland Company has signed the ratification but  
7 it arrived in my office after I left yesterday, so I couldn't  
8 bring it; but I will mail it in.

9 Q Returning to your basic Unit Agreement here, Mr. Metcalfe,  
10 what type of form had you used or where did you obtain your  
11 Unit Agreement form?

12 A Well, this is a modification of the form that we have used  
13 in our two Pearl Queen Units, which contact federal as well  
14 as state lands, and we modified this which I believe is the  
15 form that's approved for federal land.

16 Q What is the unitized formation?

17 A It's a Wolfcamp.

18 Q Who is the designated operator?

19 A Tamarack.

20 Q You have referred to Exhibit B, which is an attachment to  
21 the Unit Agreement, and that does indicate the basis of  
22 tract participation?

23 A That's correct.

24 Q What is the expiration date of your Unit Agreement with  
25 regards to Oil Conservation Commission approval?

1 A It is June 1, 1973.

2 Q In other words, those people that have ratified the  
3 agreement have given you until June 1, 1973, to obtain  
4 Oil Conservation Commission approval?

5 A That is correct.

6 Q In your opinion, Mr. Metcalfe, will approval of this  
7 agreement impair anyone's correlative rights?

8 A No, sir.

9 Q Will the approval of this agreement result in the preven-  
10 tion of waste of hydrocarbons?

11 A Yes.

12 Q Was Exhibit 1 and the attachments thereto prepared by you  
13 or under your direction and supervision?

14 A Yes.

15 MR. KELLAHIN: We have no further questions on  
16 direct examination.

17 CROSS EXAMINATION

18 BY MR. NUTTER:

19 Q You stated Mrs. Simpson has an interest in four tracts?

20 A Yes, sir, in Tract 1, 2, 4 and 5.

21 Q These other people are limited to the one tract?

22 A They are limited to Tract 2, which has no current production  
23 at this time and no Phase I participation, but it will have  
24 some Phase II participation.

25 Q I see.

1 MR. NUTTER: Are there any further questions of Mr.  
2 Metcalfe?

3 (No response)

4 MR. NUTTER: He may be excused.

5 MR. KELLAHIN: The Applicant calls Mr. Williamson.

6 ROY C. WILLIAMSON

7 appeared as a witness, and after being duly sworn, testified as  
8 follows:

9 DIRECT EXAMINATION

10 BY MR. KELLAHIN:

11 Q Mr. Williamson, will you please state your name, by whom  
12 you are employed, and in what capacity?

13 A I'm Roy Williamson, I'm President of the consulting firm  
14 of Sipes, Williamson, Runyan & Aycock in Midland, Texas.

15 Q What is your relationship with Tamarack Petroleum Company  
16 in this particular application?

17 A I have been a consultant to them in preparing the study for  
18 the waterflood recovery project.

19 Q Have you previously testified before this Commission or one  
20 of its hearing examiners and had your qualifications accepted?

21 A Yes, I have.

22 MR. KELLAHIN: Mr. Examiner, are the witness' qualifica-  
23 tions acceptable?

24 MR. NUTTER: Yes, they are.

25 Q (By Mr. Kellahin) To begin, Mr. Williamson, I direct your

1 attention to what I have marked as Applicant's Exhibit 2,  
2 that's your letter of May 9, 1973, and Applicant's Exhibit 3,  
3 which is a plat of the Unit Agreement. Now, in connection  
4 with Exhibit 3, this is the plat, will you please identify  
5 for the Examiner the proposed unit area?

6 A Yes, the proposed unit area is in the south half of  
7 Section 35 of Township 12, Range 38 and encompasses the  
8 majority of Section 2 in Township 13, 38.

9 Q This is indicated by the broken, dotted line?

10 A By the broken, dotted line, yes. The southeastern 160  
11 acres and the southwest -- 80 acres, I mean, -- are out  
12 of the unit area in Section 2.

13 Q From what formation are the wells on the plat producing?

14 A They are producing from the Wolfcamp.

15 Q Have you located all of the wells in the Wolfcamp formation  
16 in a two-mile radius from the unit area?

17 A Right, there are some additional Wolfcamp wells down to the  
18 south in Section 11 but their remoteness from this area  
19 precludes them from being included in this particular water-  
20 flood project.

21 Q It was, therefore, not feasible to include these in your  
22 unit waterflood?

23 A That's correct. We had an open space there of approximately  
24 half a mile, and therefore whatever happens in one area  
25 would not affect the other area.



1 Q Will you please locate your proposed injection wells?

2 A Okay. We have three proposed injection wells. The first  
3 one is Texaco Harris Number 3 which is located in Section 35.  
4 The next is the Tamarack Lipscomb Estate Harris Number 1  
5 located in position C in Section 2, and the third well is  
6 the Tamarack Harris Number 1 located in the south half of  
7 Section 2.

8 Q In connection with the plat, Exhibit 3, will you now refer  
9 back to your letter of May 9, 1973, and let me ask you some  
10 questions about this?

11 A All right.

12 Q What is the depth of the Wolfcamp production?

13 A The depth is approximately 9,000 feet.

14 Q Will you please discuss for us and provide your data on  
15 the current primary recovery for the nine wells in the unit  
16 area?

17 A The estimated primary ultimate from the nine wells as  
18 determined from the decline curve analysis is approximately  
19 1,182,849 barrels of oil. The cumulative production from  
20 these wells as of March 1, 1973, was 1,020,766 barrels of  
21 oil, leaving primary reserves of 162,083 barrels.

22 Q What was your production for February?

23 A Production for February was 1,202 barrels of oil, 1,275  
24 mcf of gas, and 1,014 barrels of water.

25 Q What is the primary drive mechanism for your primary

1 recovery?

2 A Solution gas.

3 Q What is your opinion concerning your estimate of recovery  
4 under secondary recovery?

5 A Because of the fact that we do not have enough wells to  
6 put in what we would call an enclosed pattern of any kind,  
7 we have assumed that the pattern that we have presented of  
8 the three injection wells down the center is the most  
9 logical from a recovery and prevention of waste standpoint,  
10 and we have estimated then that the secondary recovery will  
11 be approximately 39% of the primary recovery. Therefore,  
12 the additional oil recovery under secondary operations is  
13 461,255 barrels. Adding this to the remaining primary  
14 reserves gives us a total reserve, primary plus secondary,  
15 as of April 1, of 623,338 barrels.

16 Q In your opinion, can the unit area be successfully and  
17 economically waterflooded?

18 A Yes, it can.

19 Q Do you have any data on the porosity of your unit area?

20 A Only from porosity logs that are available, and calculates  
21 an average porosity of approximately 7% with the leased  
22 porosity that has been recorded on the logs of around 10%.

23 Q When, in your opinion, will primary production have declined  
24 to the point where you would recommend secondary recovery  
25 by waterflooding?

1 A Well, we are at that point now.

2 Q Will this proposed waterflood result in the recovery of  
3 oil that otherwise would not be recovered, thereby preventing  
4 waste?

5 A That is correct.

6 Q What effect, if any, does the proposed waterflood project  
7 have upon the correlative rights of others?

8 A I think it will protect the correlative rights by virtue  
9 of the unitization recommended.

10 Q Let's refer to what has been marked as Applicant's Exhibit  
11 No. 4. Will you identify that for me, please?

12 A Yes, Exhibit No. 4 is a schematic of the injection well,  
13 the Tamarack Number 1 Harris. On this schematic we show  
14 the casing settings, the cementing volumes, the perforating  
15 interval, the recommended installation of the plastic line,  
16 injection tubing and a packer.

17 We will meter and record the pressure for the injection  
18 volume.

19 Q Will you fill the annulus with an inert gas or some other  
20 substance?

21 A Right, yes, we will.

22 Q Will you please refer to what has been marked as Applicant's  
23 Exhibit No. 5 and identify that for us, please?

24 A This is a copy of the log, sonic log, run in the well, and  
25 I have identified the perforated interval by means of a

1 little box with two circles in it; perforations being from  
2 9,068 feet to 9,100 feet.

3 Q This is not a new injection well, you are converting a  
4 production well, is that correct?

5 A That's correct.

6 Q What is the history of production on this Harris Number 1?

7 A The Harris Number 1 has a current production of 530 barrels  
8 of oil and has cumulative oil as of 3/1/73 of approximately  
9 173,000 barrels.

10 Q Please refer to what has been marked as Applicant's Exhibit  
11 No. 6, identify that for us, please.

12 A This is another schematic of the injection well, the  
13 Tamarack Number 1 Lipscomb Estate, and there again we show  
14 the casing and cementing records, the recommended packer  
15 and tubing hook-up, and the perforated interval.

16 Q Please refer to what has been marked as Applicant's Exhibit  
17 No. 7 and identify this.

18 A Exhibit No. 7 is a gamma ray neutron log from this well  
19 again showing the location of the current perforations of  
20 9,047-64 feet and 9,072-90 feet.

21 Q These current perforations, will they be used as points of  
22 injection?

23 A That is correct.

24 Q What is the history of production on this one?

25 A This well is currently not producing. It producted 66

1 barrels of oil in January and in February did not produce  
2 anything. However, it has a cumulative of 228,000 barrels.

3 Q Please refer to what has been marked as Applicant's  
4 Exhibit No. 8 and identify that.

5 A All right. This is another injection well, the Texaco  
6 Number 3 Harris. Again, the schematic showing, the casing,  
7 cementing, tubing, and perforation record on this well.

8 Q You've shown us three schematics on all three injection  
9 wells. Are all three of these proposed injection wells  
10 to be completed in accordance with sound engineering prac-  
11 tices?

12 A Yes, they are.

13 Q Will you please refer to what has been marked as Exhibit No.  
14 9?

15 A This is a sonic log on the Harris Number 3 well. However,  
16 the well was originally drilled by White Hall Oil Company  
17 and the title at that time was the Harris Number 1. On this  
18 log also are shown the perforated intervals from 9,077 feet  
19 to 9,090 feet.

20 Q What is the history of production on this well, Mr. Williamson?

21 A This well has been shut-in since the first part of 1969 with  
22 a cumulative production of 53,000 barrels.

23 Q What will be the point of injection?

24 A It will be through the perforated interval 9,077 to 90.

25 Q Please refer to Applicant's Exhibit No. 10 and identify

1 this, please.

2 A Number 10 is a water analysis study from Martin Water  
3 Laboratories. This was occasioned by the fact that the  
4 water supply for this unit will be provided from Devonian  
5 wells that Amerada has in Section 11. They have agreed to  
6 furnish this water to Tamarack for flooding the Wolfcamp.  
7 We obtained this study in order to see what the capability  
8 of the two waters would be.

9 There are no calcium carbonate or calcium sulfate  
10 scaling tendencies; therefore, this should not be a problem  
11 in mixing water. The Wolfcamp water does contain a moderate  
12 amount of soluble iron and the Devonian water contains a  
13 mild amount of hydrogen sulfide. The mixing of these waters  
14 in equal quantities would result in the precipitation of  
15 essentially all the iron and sulfide from the waters. We  
16 do not feel that this would be a problem in the reservoir  
17 and initially the produced water from the Wolfcamp field  
18 will be hauled away and will not be reinjected into the  
19 formation. At such time as we do begin to produce significant  
20 amounts of the produced water, we will test and filter it  
21 so we do not create a plugging problem in our injection  
22 wells.

23 Q Do you have an estimated total volume of water to be injected  
24 in the waterflooding?

25 A It should be in the neighborhood of 5,000,000 barrels of

1 water. We will initially inject approximately 1,000 barrels  
2 of water per well per day for a total of 3,000 barrels per  
3 day, and, as we fill up, we will reduce this injection to  
4 maximize draws and maximize production.

5 Q Will the water be injected under pressure?

6 A Yes, it will. We anticipate that the surface injection  
7 pressure will not exceed 1500 pounds.

8 Q What is the anticipated life of the unit, Mr. Williamson?

9 A Approximately 15 years.

10 Q Were Exhibits 2 through 9 either prepared by you or under  
11 your direction and supervision?

12 A Yes, they were.

13 MR. KELLAHIN: The Applicant moves for introduction of  
14 Applicant's Exhibits 1 through 9.

15 MR. NUTTER: How about 10?

16 MR. KELLAHIN: Yes, 10 also.

17 MR. NUTTER: Applicant's Exhibits 1 through 10 will be  
18 admitted in evidence.

19 MR. KELLAHIN: That concludes our direct examination.

20 CROSS EXAMINATION

21 BY MR. NUTTER:

22 Q Mr. Williamson, will you place a pressure gauge on the annulus,  
23 to determine, if there was leakage, you would have one there?

24 A Yes, we certainly would.

25 Q Have you decided yet what type of inert fluid would be

1 would be put in the annulus?

2 A No, sir, it would probably be an inhibited fluid.

3 Q It would be a liquid fluid?

4 A Right, liquid as opposed to gas, yes, sir.

5 Q How much water is the Wolfcamp making at the present time,  
6 do you have any idea?

7 A For the month of February, we produced 12,000 barrels or  
8 approximately 30, 35 barrels a day.

9 MR. NUTTER: Are there any other questions of Mr.  
10 Williamson?

11 (No response)

12 MR. NUTTER: You may be excused. Do you have anything  
13 further, Mr. Kellahin?

14 MR. KELLAHIN: No, sir.

15 MR. NUTTER: Does anyone have anything they wish to  
16 offer in Cases 4959 and 4960?

17 (No response)

18 MR. NUTTER: We will take the case under advisement.

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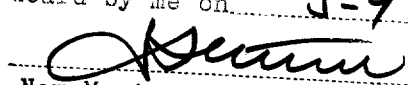
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1 STATE OF NEW MEXICO )  
2 ) ss.  
3 COUNTY OF BERNALILLO )

4 I, JOHN DE LA ROSA, a Certified Shorthand Reporter, do  
5 hereby certify that the foregoing and attached Transcript of  
6 Hearing before the New Mexico Oil Conservation Commission was  
7 reported by me; and that the same is a true and correct record  
8 of the said proceedings, to the best of my knowledge, skill and  
9 ability.

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11 CERTIFIED SHORTHAND REPORTER

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23 I do hereby certify that the foregoing is  
24 a complete record of the proceedings in  
the Examiner hearing of Case No. 4959-4960  
25 heard by me on 5-9, 19 73.  
  
Examiner  
New Mexico Oil Conservation Commission

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